

REMARKS

The present application had claims 23-44 pending. Applicants have herein amended claims 23, 27, 28, 29, 31, 32, 34, 35, 42 and 43, canceled claims 26, 30, 33, 38-40 and 44, and have added new claims 45-47. Claims 23-25, 27-29, 31, 32, 34-37, 41-43, 45, 46 and 47 are now pending in the present application.

Independent claim 23 has been amended to specify, *inter alia*, that the edges of the gas diffusion layers and of the ion-conducting membrane (that is not supported by the gas diffusion layer on the front side) are enclosed by a reinforced sealing material. Support for this amendment may be found in the originally-filed and the previously presented claims, in example 4, and on page 13, lines 20-34, of the English translation of the application. Support for new claims 45 to 47 may also be found on page 13, lines 20-34, of the application. The remaining amendments are minor in nature and were made to improve the clarity of the claims. None of the amendments, nor the addition of claims 45 to 47, introduces new matter to the present disclosure.

In the May 26, 2010 Office Action, the Examiner rejected claim 27 under 35 USC §112 as allegedly being indefinite. Applicants have herein deleted the phrase to which the Examiner objected, and believe that the rejection has been overcome.

The Examiner in the May 26th Office Action also rejected claims 23, 24, 26, 27, 29, 30, 33, 34, and 38-44 under 35 USC §102(b) as allegedly being anticipated by Nanaumi, *et al.* (US Patent Publication No. 2003/0049518). Additionally, the Examiner cited 35 USC §103(a) to reject the remaining claims as allegedly being obvious over Nanaumi, either alone or in view of Biegert (US Patent Publication No. 2003/0049367).

Applicants respectfully disagree with the Examiner's positions. Independent claim 23 now requires that the edges of the gas diffusion layers and of the surface of the ion-conducting membrane that is not supported by the gas diffusion layer on the front

side, be enclosed by a sealing material which comprises a thermoplastic polymer that is reinforced by an electrically insulating inorganic material.

Nanaumi does not disclose, teach or suggest sealing the edges of the gas diffusion layers and/or the membrane with a thermoplastic polymer that is reinforced by an electrically insulating inorganic material. Nowhere in Nanaumi is it taught to reinforce a thermoplastic polymer with inorganic materials. In light of this deficiency of Nanaumi and the additional limitations incorporated into independent claim 23, claim 23 and its dependent claims can not be anticipated by the Nanaumi reference.

Moreover, there is no teaching or suggestion in Nanaumi that would lead a skilled artisan in the field to modify the teachings of Nanaumi to incorporate a reinforcing inorganic material into the sealing material.

Likewise, the Biegert reference also fails to disclose, teach or suggest the incorporation of an electrically insulating inorganic material for reinforcing the sealing material. Although Biegert discloses thermoplastic polymers, the reference is silent as to polymers reinforced with an electrically insulating inorganic material as required by the elements of claim 23, as amended herein.

Accordingly, Applicants maintain that the claimed invention, as presently set forth in the amended claims above, is patentably distinct from both the Nanaumi and Biegert references, either alone or in combination.

An objective of the present invention is to provide a better membrane-electrode-assembly (MEA) design compared to prior art MEAs in terms of power, life and sealing of the gas spaces or gas inlets. The claimed MEA of the present application provides:

- a) lower danger of short-circuiting;
- b) gas-tight sealing thereby preventing hydrogen penetration; and

c) high creep resistance under mechanical strength.

When using the semi-coextensive design of the present invention and thermoplastic polymers reinforced with inorganic materials as sealants, as required by the amended claims, a very creep-resistant, stable polymer rim is obtained.

In light of the foregoing remarks and claim amendments, Applicants respectfully request withdrawal of the rejections set forth in the May 26, 2010 Office Action and solicit allowance of the present application.

No fee is believed due in connection with the filing of the present amendment, other than the fee for the requested three-month extension of time. If any additional fees are due, or an overpayment has been made, please charge, or credit, our Deposit Account No. 50-5371 for such sum.

If the Examiner has any questions regarding the present application, the Examiner is cordially invited to contact Applicants' attorney at the number provided below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "John J. Santalone", written over a horizontal line.

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